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## CALIFORNIA MEDICAL ASSOCIATION AND PUBLIC HEALTH

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SESSION

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THE objects of the California Medical Association as defined in the constitution, are "to promote the science and art of medicine and the betterment of public health."

The advance of the science of medicine more or less has run parallel with other scientific advance. Before education was general, medicine reflected the mental attitude of those it served. When demons were thought to be the cause of disease, weird noises or drums or fantastic dancing were used by the medicine men to scare them off. Even in this enlightened age, despite the scientific facts revealed by the microscope, many minds have not progressed beyond the stage of demonology. These minds deduce their medical beliefs from principles or premises based on tradition and superstition. Nevertheless, with education, there has been steadily building a foundation of scientific fact, on which the present science and art of medicine will firmly rest. The discoveries of Jenner and Pasteur gave to the healing art its first great scientific impetus.

About 1796 Edward Jenner, a practitioner of Gloucestershire, England, transferred cowpox infection from the hand of a milkmaid to the arm of a man, and so established the fact that immunity could be produced. As a result of vaccination, smallpox, the dread blemisher of human beauty and destroyer of human life, has become a thing of no moment, except to those persons who have contracted the disease by foolish neglect of the protection offered by vaccination. But for Jenner's discovery, probably 50 per cent of the people of this city would have their faces permanently scarred and pocked.

Surgeon-General Cumming's latest report states that the United States had more smallpox last year than any other country in the world, except India; over thirty-four thousand cases. This is a situation that is difficult to understand. The personal liberty of opinion, so fearfully secured to the pioneers who settled America, in this instance acts as a boomerang for destruction. Federal laws, stringently enforced, protect our seaports from infestation by plague, or smallpox or other scourges, but within our country itself, no federal

law enforces vaccination. States may, but more often do not have adequate laws concerning vaccination. A result is all this deplorable illness due to smallpox, and this in the face of the almost universal education in America's public schools, and the positive and unassailable truth that vaccination protects against this disease. Despite education and science there are prejudiced believers in cults who question the effectiveness of vaccination and attempt by precept and example and propaganda to prevent its employment.

Louis Pasteur's discovery that bacteria are the direct cause of many diseases has been applied practically by medical practitioners and so has saved untold thousands of lives. The complete eradication of diphtheria, scarlet fever, typhus and typhoid fever, and other plagues of bacterial origin that have yearly reaped their harvest of thousands of human lives are falling before the gigantic march of preventive medicine. Cholera, which once was the dread of all nations, has become but a name in civilized countries.

Joseph Lister, following the work of Pasteur, in 1878 showed how bacterial infection of wounds could be prevented by applying the principles of antisepsis in surgical operations. This momentous discovery revolutionized surgery and greatly reduced mortality after operation.

These have been only a few of the contributions of the physician to the march of human progress. Within the span of this generation more has been added to the sum of human knowledge than in any previous period of the world's history. Fundamental principles of science have found practical application beyond even the vision of the dreamer. Through their application of recent scientific knowledge, man has been given, in a measure, mastery of the land, sea, and sky; news and knowledge are thus promptly interchanged and the advancement of one people becomes the heritage of all.

In the field of medical research the advancement has been little less than remarkable. Rapid strides have been made. Chemistry in medicine has taken a prominent place. Physics, biochemistry, pathology, bacteriology, sanitation, and preventive medicine have been developed to a high degree, and have contributed much to the sum total of medical knowledge.

Without due attention to the betterment of public health no lasting progress can be made. Subject to the great biologic laws, the actual existence of a nation can be secure only through the understanding and control of the factors that

hamper or promote human welfare. History warns us that the civilized races can lose all that they have gained if they fail to profit from the lessons of experience and fact. Many nations and races are known today only by a few pots or arrowheads. One biologic mistake or another has merged them with the dust.

What then is the best way to make practical application of the discoveries made in medicine that the object of this California Medical Association, namely, "the betterment of public health" may best be achieved?

#### HEALTH EDUCATION

Health education of the public, through the magazines, newspapers and the radio, personal examination and instruction, and enforcement of public health laws by properly qualified officials, will do much to attain the ideal of the medical profession—the betterment of the health of the nation. As a profession, we are now deeply enmeshed in legislation and in the service of government. In many instances those outside the profession have without our aid made the laws that govern medicine. Physicians until recently have contributed insufficiently to public health education. *The Saturday Evening Post* recently said that "the science of medicine, as far as the layman is concerned, is the most tongue-tied of all the learned professions." It called attention to the difficulty surrounding the scientific vocabulary of medicine as a means of teaching the public, and the shying attitude of the profession to the lay press. It made the statement, "The enlightened physician has a great body of news of the highest importance to communicate to the nonmedical reader. When the medical profession becomes more fully awake to its responsibility in this field, it is to be hoped that it will perceive the gravity and importance of its problem and attack it in force over a nation-wide front. Some national body, such as the American Medical Association, which has made such a good start along these lines, ought to take up the matter in a big way and work out a comprehensive program, which would unify the agencies which are already in the field, and cover the lay press of the whole country." This criticism from a lay journal is perhaps not wholly undeserved, although much progress has been made along these lines. Four years ago trustees of the American Medical Association entered the field of public health instruction by establishing *Hygea*, a monthly public health journal, published especially for the lay public, and it has already qualified as a public health journal of great worth. In our own State of California we have a similar publication, *Better Health*, which has done a big service in educating the laity on sound public health principles. Many of our great newspaper syndicates publish daily health columns from reputable medical men, and refuse to accept propaganda of quackery, and vicious nostrum advertisements, in the interests of public health.

Periodic physical examination of the supposedly healthy is one of the public health measures that

has been approved by the profession. The House of Delegates of the American Medical Association is on record as approving this measure. State and county medical associations are urged not only to undertake the actual work of examination, but also to promote this helpful work in every way possible.

A cancer week, a tuberculosis week, and a baby welfare week have been held in many cities, at which times the staffs of hospitals have examined the public free of charge. These examinations have done untold good and have been the means of discovering many cases of both cancer and tuberculosis in the earliest stages, when expectation of permanent cure is most hopeful.

This task of wholesale examination is a stupendous one, but it is believed by physicians that where it is systematically and thoroughly carried out in any state or community that the average life of the inhabitants of that locality will be increased at least seven years over the twenty that have already been added to the average life in the last half century.

The radio likewise should serve the cause and be made to spread the gospel of good health. At present, in California, it is used mostly by the cultists to spread propaganda of misinformation and to bring the unsuspecting public to their offices. In many of the eastern states radio instruction in public health matters is rapidly increasing, as a result of definite programs arranged by state and county medical associations. I would urge that our state and county medical associations inaugurate a similar plan. Public officials are beginning to appreciate their responsibility regarding these measures, and realize that one of the greatest functions of government is the preservation of public health. The governor of one of our largest eastern states in his message to the state legislators had this to say: "I renew the recommendation of a year ago, that careful consideration be given to the protection of the people of this state from unlicensed and unqualified persons practicing medicine. The coöperation of the medical profession is an essential factor in the protection of the public health as well as in the care of the sick. A very large part of modern public health service is urging the people to get the advice of their physician before serious and perhaps incurable conditions have developed. Such efforts come to naught if unqualified persons are allowed to hold themselves out as physicians. The subject is a difficult one, but the State of New York should take the lead in establishing high standards of medical practice and providing a practical plan for their enforcement. It is a matter of justice to qualified physicians and of protection to the public." Let us hope our Governor and Legislators will emulate this fine example of humanitarianism and help this state, especially the southern part, rid itself of some of the unqualified, or at least help the public to protect itself against those that are to come, and to compel everyone that is practicing the healing art to set forth his

qualifications in such a way that the stranger may know what sort of practitioner he is employing.

Dr. Wendell C. Phillips in his presidential address to the American Medical Association at Dallas, Texas, had this to say: "The proposed campaign of public health education will surely create a demand for new contacts between patient and physician." Physicians must give a different significance to the word "patient," for in the new order of things both sick and well people must and will be on record in the lists of their physicians. They will demand that their needs shall be met. Doctor Phillips warns that unless the medical profession organizes to meet the demands in the proper spirit, various forms of state medicine are likely to become the order of the day.

Public health education is the outstanding need of the hour. The gospel of personal and community health is complex. It should be promulgated by health departments and agencies, by lectures, radios, and films, but such service will never reach its highest efficiency until it includes a maximum of direct personal instruction by the properly qualified family physician.

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## ARTERIOVENOUS ANEURYSM\*

ITS PHYSIOLOGIC EFFECTS UPON THE CIRCULATION  
AND THEIR IMPORTANCE IN RELATION  
TO SURGICAL TREATMENT

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**A**N arteriovenous aneurysm or fistula is characterized by certain physiological phenomena which make it one of the most fascinating and unique lesions in medicine. An intimate knowledge of these phenomena is essential in executing properly the surgical measures necessary to eliminate the aneurysm.

In civil life the lesion is produced by bullet wounds or knife thrusts, and in industrial life, by flying steel. There is usually a history of profuse and alarming bleeding for several moments, sometimes easily controlled by pressure, but occasionally a tourniquet is necessary to prevent exsanguination. The exact nature of the lesion is usually not recognized until several days or even weeks later, when the characteristic thrill and bruit are first noted. These are continuous throughout the cardiac cycle, markedly accentuated in systole, and are best heard over the site of the fistula although they may extend for some distance both proximally and distally to it.

A direct communication between one of the large arteries and its accompanying vein introduces a profound disturbance in the hydraulic and physiologic laws governing the circulation of the blood. Such a communication provides two routes

through which the circulating blood may pass. It may flow through the normal channels as represented by the system of heart-artery-capillary bed and vein; or it may traverse a shorter circuit consisting of the heart-artery-fistula and vein. Due to the fistula, the peripheral resistance in the shorter circuit is considerably less than the resistance in the normal circuit. Obeying the law of hydraulics that flowing water seeks the line of least resistance, it is inevitable that a considerable volume of blood will be diverted from the general circulation through the fistula.

Obviously the extent of the reduction in peripheral resistance and the amount of blood diverted through the fistula will depend upon the size of the opening. A small communication not over 3 to 4 millimeters in diameter may exist between peripheral vessels for years and, aside from the mild local disturbance due to the continuous thrill and bruit, no other effects develop. Both clinical<sup>1</sup> and experimental<sup>2</sup> evidence are at hand illustrating the innocuous character of the small fistula. The larger sized fistulae, 5 to 15 millimeters in diameter, divert so large a volume of blood from the general circulation that startling effects upon the circulatory mechanism are produced. These are comparable to the effects of bleeding from a large vessel, except that in this instance the bleeding occurs into a vein. The immediate effect of this diversion of a large volume of blood into a shorter circuit is a great fall in general blood pressure. Although no observations upon the immediate effects of a fistula in clinical cases have been recorded, very accurate observations have been made in the experimental animal (Fig. 1).

### Experiment I

On September 18, 1923, a preoperative blood pressure of 216/106, with a pulse of 84 was recorded in dog L28. On October 22 an anastomosis between the right common iliac vessels was established, the artery and vein measuring 5 and 7 millimeters respectively. The fistula was 2.5 centimeters long. A pulse rate of 120 increased to 140 during the operation. When the fistula was opened, the pulse rate immediately rose to 210, where it remained during the rest of the day. On the following day the blood pressure was very low, 110/60, and the pulse rate still remained around 200. The subsequent blood pressure and pulse readings are recorded in the chart. The pressures in the right leg below the anastomosis were always very low, approximately 50/20, indicating a fairly complete diversion of blood through the fistula.

### COMMENT

It is observed that the great fall in blood pressure was accompanied by a marked acceleration in pulse rate. Within a few days a gradual readjustment began which ultimately led to a complete recovery of systolic blood pressure, a permanent reduction in diastolic pressure, and a slight but permanent acceleration in pulse rate.

These observations are easily understood if general blood pressure is considered as being the resultant of three main factors: the cardiac output, which is determined by venous filling and by rate of cardiac contraction; peripheral resistance, which includes also the effect of vasoconstriction and vasodilatation; and the total blood volume. A decrease in any one of these three factors results

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